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10/772,544	02/05/2004	Tohru Kimura	5341-20	6115

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EXAMINER

BIBBINS, LATANYA

ART UNIT PAPER NUMBER

2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/772,544

Applicant(s)

KIMURA, TOHRU

Examiner

LaTanya Bibbins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 12, 13, 15, 16, 18, 20, 24, 25, 28, 29, 39, 40, 42, 43, 45, 47, 51, 52, and 55 is/are rejected.
- 7) ☒ Claim(s) 3-11, 14, 17, 19, 21-23, 26, 27, 30-38, 41, 44, 46, 48-50, 53, and 54 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "supporting device," of claim 55, used to support the first and second optical information recording mediums must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 18 and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

5. Claims 18 and 45 recite the limitation "the single refractive lens." There is ^{these} insufficient antecedent basis for this limitation in ~~the~~ claims.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1, 2, 12, 13, 28, 29, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtaki et al. (US Patent Number 6,449,095 B1) in view of Kaiho et al. (US PGPub Number 2003/0185136 A1).**

Regarding claim 1, Ohtaki teaches an objective lens for converging a first light flux of a first wavelength λ_1 emitted from a first light source so as to conduct reproducing and/or recording information for a first optical information recording medium (see column 4 lines 53-63 where semiconductor laser LD1 emits a 405 nm wavelength, λ_1 , for recording/reproducing for a HD-DVD) and for converging a second light flux of a second wavelength λ_2 ($\lambda_1 < \lambda_2$) emitted from a second light source so as to conduct reproducing and/or recording information for a second optical information recording medium (see column 4 lines 53-63 where semiconductor laser LD2 emits a 650 nm wavelength, λ_2 , for recording/reproducing for a DVD) comprising: a first diffractive structure provided on at least one optical surface thereof (see the objective lens assembly and the diffractive optical element 16b in Figure 1 and column 6 lines 14-18) and having plural concentric ring-shaped zones (see column 6 lines 39-44) set such that n_2 , which is an order of a diffracted ray having the maximum light amount among diffracted rays generated when the second light flux comes into the first diffractive structure, is a lower order than n_1 , which is an order of a diffracted ray having the maximum light amount among diffracted rays generated when the first light flux comes into the first diffractive structure, where n_1 and n_2 are an integer other than 0 (see Figures 5A, 5B, and column 7 lines 7-38 where the first diffraction order of the diffracted beam of the first laser beam, n_1 , is greater than the second diffraction order of the diffracted beam of the second laser beam, n_2), wherein the n_1 -th order diffracted ray is converged on an information recording surface of the first optical information recording medium through the first protective substrate (see column 7 lines 10-14) in

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such a way that when a wavefront aberration is measured within a first numerical aperture NA1, the RMS value of the wavefront aberration becomes $0.07\lambda_1$ or less (see column 10 lines 41-49), and the n2-th order diffracted ray is converged on a information recording surface of the second optical information recording medium through the second protective substrate (see column 7 lines 20-22) in such a way that when a wavefront aberration is measured within a second numerical aperture NA2, the RMS value of the wavefront aberration becomes $0.07\lambda_2$ or less (see column 10 lines 56-65).

Ohtaki fails to teach a first protective substrate having a thickness t_1 ($0 \text{ mm} \leq t_1 \leq 0.2 \text{ mm}$), a second protective substrate having a thickness t_2 ($t_2 > t_1$), and first and second numerical apertures, NA1 and NA2 respectively, where $NA_2 < NA_1$. Kaiho, however, teaches a high definition-digital versatile disc (HD-DVD) with a light transmission protective layer having a thickness of 0.1 mm (t_1) and a DVD with a protective layer thickness of 0.6 mm (t_2) such that $0 \text{ mm} \leq t_1 \leq 0.2 \text{ mm}$ and $t_2 > t_1$ are satisfied (see Kaiho paragraph [0005] and Table 1). Kaiho also teaches that the HD-DVD has a numerical aperture of 0.85 (NA1) while the DVD has a numerical aperture of 0.60 (NA2) thus satisfying a relationship $NA_2 < NA_1$ (see Table 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kaiho with the teachings of Ohtaki. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to increase the large quantity of the storing data (Kaiho paragraph [0005]).

Regarding claim 2, Ohtaki and Kaiho teach the objective lens of claim 1, wherein the following formula is satisfied: $\lambda_2/\lambda_1 \geq 1.3$ (see Ohtaki column 4 lines 53-61 where $\lambda_1 = 405$ nm and $\lambda_2 = 650$ nm and therefore $\lambda_2/\lambda_1 > 1.3$).

Regarding claim 12, Ohtaki and Kaiho teach the objective lens of claim 1, wherein a combination of n_1 and n_2 is $(n_1, n_2) = (2, 1), (3, 2), (5, 3)$ or $(8, 5)$, and the following formulas are satisfied: $390 \text{ nm} < \lambda_1 < 420 \text{ nm}$ $640 \text{ nm} < \lambda_2 < 670 \text{ nm}$ (see Ohtaki column 7 lines 32-38 and the discussion of the relationship between the first diffraction order of the diffracted beam of the first laser beam, n_1 , and the second diffraction order of the diffracted beam of the second laser beam, n_2 , specifically, where n_1 is greater than n_2 by 1 and n_2 is not less than 1 therefore $(n_1, n_2) = (2, 1)$)).

Regarding claim 13, Ohtaki and Kaiho teach the objective lens of claim 12, wherein the combination of n_1 and n_2 is $(n_1, n_2) = (2, 1)$ (see Ohtaki column 7 lines 32-38 and the discussion of the relationship between the first diffraction order of the diffracted beam of the first laser beam, n_1 , and the second diffraction order of the diffracted beam of the second laser beam, n_2 , specifically, where n_1 is greater than n_2 by 1 and n_2 is not less than 1 therefore $(n_1, n_2) = (2, 1)$)).

Claims 28, 29, 39, and 40 are drawn to an optical pickup apparatus corresponding to the objective lens claimed in claims 1, 2, 12, and 13. Therefore optical pickup apparatus claims 28, 29, 39, and 40 correspond to objective lens claims 1, 2, 12, and 13, and are rejected for the same reasons of obviousness as used above.

8. Claims 15 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtaki et al. (US Patent Number 6,449,095 B1) and Kaiho et al. (US PGPub Number 2003/0185136 A1) as applied to claim 1 above, and further in view of Takeuchi et al. (US Patent 6,807,019 B2).

Regarding claim 15, Ohtaki and Kaiho disclose the objective lens of claim 1, wherein the first diffractive structure is formed on a side of the optical surface where a light flux emitted from the first light source and the second light source comes into (see Ohtaki Figure 1 and column 6 lines 24-27 where the diffractive optical element, 16b, is located on the light source side).

Ohtaki and Kaiho fail to disclose that the objective lens comprises a single lens having a positive power. Takeuchi, however, teaches that the objective lens comprises a single lens having a positive power (see column 1 lines 66 and 67 through column 2 lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the refractive lens having a positive power taught by Takeuchi with the objective lens taught by Ohtaki and Kaiho. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to correct chromatic aberration at both the shorter and longer wavelengths (Takeuchi column 2 lines 12 and 13).

Claim 42 is drawn to an optical pickup apparatus corresponding to the objective lens claimed in claim 15. Therefore optical pickup apparatus claim 42 corresponds to

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objective lens claim 15 and is rejected for the same reason of obviousness as used above.

9. Claims 16 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtaki et al. (US Patent Number 6,449,095 B1) and Kaiho et al. (US PGPub Number 2003/0185136 A1) as applied to claim 1 above, and further in view of Saito (US Patent Number 6,597,519 B2).

Regarding claim 16, Ohtaki and Kaiho fail to teach the objective lens of claim 15, wherein $NA1 > 0.8$ and $0.8 < d/f1 < 1.6$. Saito, however, teaches an objective lens wherein the following formulas are satisfied: $NA1 > 0.8$ (see column 9 line 30) $1.2 < d/f1 < 1.7$ (column 9 line 36) where d is a lens thickness (mm) on the optical axis (column 9 line 44), and $f1$ is a focal length (mm) of an entire system of the objective lens for the first wavelength $\lambda1$ (column 9 line 39). Also note examples 4, 5, and 6 in columns 21-24).

Saito discloses the claimed invention except for $0.8 < d/f1 < 1.6$ (Saito discloses $1.2 < d/f1 < 1.7$ in column 9 line 36). It would have been obvious to one having ordinary skill in the art at the time the invention was made to create an objective lens wherein $1.2 < d/f1 < 1.7$ (column 9 line 36), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In addition, one of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Saito with Ohtaki and Kaiho in order make $d/f1$ relatively

large when the NA of the objective lens is large such that the thickness of the periphery section does not become almost zero (Saito column 25 lines 5-8).

Claim 43 is drawn to an optical pickup apparatus corresponding to the objective lens claimed in claim 16. Therefore optical pickup apparatus claim 43 corresponds to objective lens claim 16 and is rejected for the same reason of obviousness as used above.

10. Claims 20, 24, 25, 47, 51, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtaki et al. (US Patent Number 6,449,095 B1) and Kaiho et al. (US PGPub Number 2003/0185136 A1) as applied to claim 1 above, and further in view of Arai et al. (US PGPub 2001/0008513 A1).

Regarding claim 20, Ohtaki and Kaiho disclose the objective lens of claim 1, with a plurality of ring-shaped zones on the first diffractive structure but fails to teach a specific number of ring-shaped zones. Arai, however, teaches an objective lens wherein the number of the ring-shaped zones of the first diffractive structure within the second numerical aperture NA2 is in a range of 2 to 45 (see Arai paragraph [0215]).

Arai discloses the claimed invention except for the number of the ring-shaped zones of the first diffractive structure within the second numerical aperture NA2 is in a range of 10 to 60 (Arai discloses a range of 2 to 45). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the number of the ring-shaped zones of the first diffractive structure within the second numerical aperture NA2 is in a range of 10 to 60 since it has been held that where the general

conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 24, Ohtaki and Kaiho fail to teach the objective lens of claim 1, wherein $m_1 = m_2 = 0$. Arai, however, teaches an objective lens wherein the following formula is satisfied: $m_1 = m_2 = 0$ where m_1 is a first magnification when reproducing and/or recording information is conducted for the first optical information recording medium and m_2 is a second magnification when reproducing and/or recording information is conducted for the second optical information recording medium (see paragraph [0297], particularly the discussion where the image forming magnification of the objective lens of the first light flux and second light flux are zero).

Regarding claim 25, Ohtaki and Kaiho fail to teach the objective lens of claim 1, wherein $m_1 > m_2$. Arai, however, teaches an objective lens wherein the following formula is satisfied: $m_1 > m_2$ where m_1 is a first magnification when reproducing and/or recording information is conducted for the first optical information recording medium and m_2 is a second magnification when reproducing and/or recording information is conducted for the second optical information recording medium (see paragraph [0290], particularly the discussion where it is preferable that the image forming magnification m_1 is greater than m_2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ohtaki and Kaiho with Arai. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings because when reproducing and recording is

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conducted only for either the first information recording medium or the second information recording medium it is preferable that an image forming magnification of the objective lens for the first light flux is either equal to or different from that of the second light flux (Arai paragraph [0295]).

Claims 47, 51, and 52 are drawn to an optical pickup apparatus corresponding to the objective lens claimed in claims 20, 24, and 25. Therefore optical pickup apparatus claims 47, 51, and 52 correspond to objective lens claims 20, 24, and 25, and are rejected for the same reasons of obviousness as used above.

11. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtaki et al. (US Patent Number 6,449,095 B1) and Kaiho et al. (US PGPub Number 2003/0185136 A1), as applied to claim 28, and further in view of Sugaya (US PGPub 2002/0191528 A1).

Regarding claim 55, although Ohtaki and Kaio teach the optical pickup apparatus described in claim 28, both fail to teach an optical information recording reproducing apparatus, comprising a supporting device to support a first optical information recording medium and a second information recording medium.

Sugaya, however, teaches an optical information recording reproducing apparatus (see Figure 2), comprising: an optical pickup apparatus (the optical head in Figure 2 element 8); and a supporting device to support a first optical information recording medium and a second information recording medium in such a way that the optical pickup apparatus can conduct recording and/or reproducing information (see

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turntables 6A and 6B in Figure 2 and the discussion of recording and reproducing provided in paragraph [0043]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the supporting device of Sugaya into the optical pickup apparatus of Ohtaki and Kaiho. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to access two optical discs by a single optical head thereby enabling a recording time that is two or more times that of the prior art and free of any interruptions (see the abstract of Sugaya)

Allowable Subject Matter

Claims 18, 19, 45, and 46 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 3-11, 14, 17, 19, 21-23, 26, 27, 30-38, 41, 44, 46, 48-50, 53, and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 3-11 and 30-38, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 3 and 30 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the **objective lens and optical pickup apparatus of claims 1 and 28**,

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wherein the following formula is satisfied: $n_2 = \text{INT}(\lambda_1 \cdot n_1 / \lambda_2) \mid \text{INT}(\lambda_1 \cdot n_1 / \lambda_2) - (\lambda_1 \cdot n_1 / \lambda_2) \mid < 0.4$ where n_1 is an integer of 2 to 10, and $\text{INT}(\lambda_1 \cdot n_1 / \lambda_2)$ is an integer obtained by rounding the value of $(\lambda_1 \cdot n_1 / \lambda_2)$.

Regarding claims 14 and 41, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 14 and 41 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the **objective lens and optical pickup apparatus of claims 12 and 39, wherein the combination of n_1 and n_2 is $(n_1, n_2) = (3, 2)$.**

Regarding claims 17 and 44, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 17 and 44 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the **objective lens and optical pickup apparatus of claims 1 and 28, wherein the objective lens comprises a single refractive lens having a positive power and an optical element at a side where a light flux emitted from the first light source and the second light source comes into, and the following formula is satisfied: $0 \leq \mid P_{L2} / P_{L1} \mid \leq 0.2$ where P_{L1} is a paraxial power (mm^{-1}) of the single refractive lens for the first wavelength λ_1 and P_{L2} is a paraxial power (mm^{-1}) of the optical element for the first wavelength λ_1 .**

Regarding claims 18, 19, 45, and 46, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 19, 19, 45, and 46 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the **objective lens and optical pickup apparatus of claims 16 and**

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43, wherein the single refractive lens is optimized such that a spherical aberration for the first wavelength λ_1 becomes minimum in accordance with the thickness of the first protective layer.

Regarding claims 21 and 48, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 21 and 48 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the objective lens and optical pickup apparatus of claims 1 and 28, wherein the following formula is satisfied: $0.03 < |(\Delta SA/\Delta \lambda)/\{(NA_2)^4 \cdot f_1\}| < 0.14$ where $(\Delta SA/\Delta \lambda)$ represents a change ratio (λ_{RMS}/nm) of a spherical aberration on the first diffractive structure within the second numerical aperture NA_2 in the case that the first wavelength λ_1 changes within a range of ± 10 nm, and f_1 is a focal length (mm) of an entire system of the objective lens for the first wavelength λ_1 .

Regarding claims 22 and 49, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 22 and 49 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the objective lens and optical pickup apparatus of claims 1 and 28, wherein the following formula is satisfied: $0.0008 < |(\Delta SA_M/\Delta \lambda)/\{(NA_2)^2 \cdot f_1\}| < 0.0021$ where $(\Delta SA_M/\Delta \lambda)$ represents a change ratio (mm/nm) of a spherical aberration of a marginal ray of the second numerical aperture NA_2 in the case that the first wavelength λ_1 changes within a range of ± 10 nm, and f_1 is a focal length (mm) of an entire system of the objective lens for the first wavelength λ_1 .

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23. The objective lens of claim 1, wherein the second light flux which has passed through an outside region of the second numerical aperture NA2 and arrives a information recording plane of the second information recording medium has a spherical aberration of $0.07 \lambda_{2RMS}$ or more within the first numerical aperture NA1.

Regarding claims 23 and 50, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 23 and 50 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the objective lens and optical pickup apparatus of claims 1 and 28, wherein the second light flux which has passed through an outside region of the second numerical aperture NA2 and arrives a information recording plane of the second information recording medium has a spherical aberration of $0.07 \lambda_{2RMS}$ or more within the first numerical aperture NA1.

Regarding claims 26 and 53, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 26 and 53 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the objective lens and optical pickup apparatus of claims 1 and 28, wherein an optical surface of the objective lens comprises a central region located inside of the second numerical aperture NA2 and a peripheral region located outside of the second numerical aperture NA2 so as to surround the central region, and wherein the first diffractive structure is formed on the central

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region and a second diffractive structure optimized with the first wavelength λ_1 is formed on the peripheral region.

Regarding claims 27 and 54, none of the references of record, alone or in combination, suggest or fairly teach the limitations of claims 27 and 54 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose the objective lens and optical pickup apparatus of claims 1 and 28, wherein an optical surface of the objective lens comprises a central region located inside of the second numerical aperture NA2 and a peripheral region located outside of the second numerical aperture NA2 so as to surround the central region, and wherein the first diffractive structure is formed only on the central region and the peripheral region is a continuous surface.

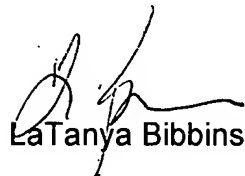
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571) 270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LaTanya Bibbins



THANG V. TRAN
PRIMARY EXAMINER